

PROCEDURES FOR UPDATING PREQUALIFICATION FOR ENGINEERING AND ENGINEERING-RELATED SERVICES WITH THE DEPARTMENT OF HIGHWAYS

KRS Chapter 45A requires that consulting firms desiring to be prequalified with the Transportation Cabinet provide annual updates of their qualifications. The anniversary date is the date of the letter from the Cabinet granting approval of the firm's prequalification request. This shall establish the firm's annual renewal date by which the firm is expected to have renewed its qualifications with the Cabinet.

Annual applications shall include one (1) original and one (1) copy of the application for each functional area requested, and one (1) original and one (1) copy of a current marketing brochure; unless otherwise communicated to the firm in writing. Copy for functional area may be submitted as an electronic document in Adobe PDF format on CD or DVD media.

It is the sole responsibility of the firm to initiate a renewal of its prequalification with the Cabinet. The Cabinet does not send notices of a need to renew. If the firm makes no effort within thirty (30) days of its annual renewal date, then the firm is automatically removed from the Cabinet's listing of prequalified consultants.

Each year, thirty (30) days prior to the firm's annual renewal date, it must submit an updated Prequalification Application Form TC 40-1 for review by the Cabinet's Prequalification Committee.

If the firm has undergone significant modifications to its organization, staffing, or financial status which could affect the firm's qualification status with the Cabinet, then a revised prequalification application is required at the time those changes occur and no later than thirty (30) days prior to the firm's annual renewal date.

Please direct requests for prequalification forms (TC 40-1) and questions regarding the status of prequalification actions to:

Mrs. Claressa Hamilton
Kentucky Transportation Cabinet
Department of Highways
Division of Program Performance
200 Mero Street, 3rd Floor
Frankfort, KY 40622
Phone: (502) 564-4555

ENGINEERING AND RELATED SERVICES PREQUALIFICATION CRITERIA

The following criteria should be used by the Highway Department's User Divisions in evaluating a firm's qualifications in the requested categories or sub-categories. Acceptable experience of a firm requesting prequalification in a category of work may result from satisfactory work performed by an individual(s) working for the requesting firm or by an individual(s) who gained the required experience while working for another firm or governmental agency that performed similar work or projects. The Division of Professional Services, the External Audit Branch, the User Divisions or the Prequalification Committee may request additional documents to supplement information provided in a submitted prequalification form.

Prequalification Criteria is set by the User Division responsible for the services. Criteria may be changed at any time by the User Division. Firms applying for prequalification should check the User Division Guidance Manual and Policy Memos for updated criteria and other information regarding prequalification.

Performance-based Pre-qualification and Renewal

The single best indicator of firm viability is a strong history of performance. Firms with a proven track record will be prequalified unless conditions of their previous pre-qualification status change. A firm's renewal of pre-qualification status will be based on a satisfactory performance on current projects; and an affirmation by an officer of the firm that the licensed professional engineers identified in previous submittals for prequalification remain in that visible function, no equipment requirements have been listed previously, and that the firm is financially solvent and has working arrangements with financial institutions such that all outstanding financial obligations may be met. Any changes in any of these conditions must be submitted as part of the annual request for renewal. Failure to submit information on such changes can lead to the firm's removal of prequalification.

Reasons for Removal of Pre-qualification

A firm's project performance will be a basis for continued prequalification. As stated above, under the Qualification-Based Selection (QBS) process, performance is an important indicator of a firm's ability to produce the required plans or other product. Removal of prequalification will therefore be based on a firm's failure to perform in a professional and capable manner. Failure to meet schedules on items within the consultant's responsibility will also be a basis for removal of prequalification.

Removal from prequalification will generally be for one (1) year. Re-evaluation of conditions after that year indicating continued non-performance might lead to continued denial of prequalification on a year by year basis.

In addition to the criteria listed below, the deliberate misrepresentation of the firm's qualification and/or the failure to notify the Cabinet of significant changes in the staffing situation of economic condition of a firm will result in the loss of the pre-qualification status for a period of at least one (1) year. The failure to correct the identified deficiencies will result in the continued denial of pre-qualification on a year by year basis.

(REVISED 3/02)

Initial Prequalification - A firm will provide all information required for the individual areas for which prequalification is requested. An alphabetized listing of the firm's staff with appropriate professional status, areas in which each person works (i.e., Environmental, Highway Design, etc.), and an identification of whether they are full-time or part-time employees will be provided.

A full time employee is defined as one who has eligibility to participate in the firm's benefits program. In addition, an officer of the firm must attest that the firm is financially solvent and have a working arrangement with financial institutions such that all outstanding financial obligations will be met.

Engineering Service User - Highway Design Division (502-564-3280)

RURAL ROADWAY DESIGN - A firm shall have at least two (2) engineers licensed in Kentucky, one of which will be directly involved in project development. The licensed engineer shall have demonstrated capabilities by education and/or experience to perform rural roadway design activities. Staffing shall be adequate to perform the bulk of work on an average size project. The personnel employed by the firm shall have expertise in roadway design through previous experience, specialized training, education, or a combination thereof. The overall qualification of a firm to perform roadway design will be evaluated on the basis of past performance whether for the Transportation Cabinet or another agency. A firm requesting prequalification solely based on work with other agencies shall provide sufficient information to allow for an evaluation of past performance with that agency. This information must include the name of an individual within that agency directly responsible for the project and may include performance evaluation documents, letters from the agency addressing past performance or other similar documents. Equipment shall be adequate to provide plans and studies utilizing computer graphics and digital terrain modeling techniques for an average type of project and to a format specified by the Cabinet's Division of Design. Sufficient financial information should be provided to demonstrate the stability of the firm during the prequalification period.
(REVISED 3/02)

RURAL ROADWAY DESIGN (SMALL PROJECTS) - A firm with only one (1) engineer licensed in Kentucky or with no previous experience may be pre-qualified for small projects providing sufficient information is furnished on the other factors which demonstrate adequate capabilities for design. A small project is defined to be one for which the total estimated design fee is less than \$250,000.00. (REVISED 3/02)

URBAN ROADWAY DESIGN - A firm shall satisfy the criteria set forth for Rural Roadway Design. Additional criteria required for urban projects shall include experience and/or training in traffic flow analysis, intersection channelization, urban geometrics, urban storm water modeling, and other related topics. (REVISED 7/94)

SURVEYING - A firm shall have a minimum on one (1) land surveyor licensed in Kentucky. Staff shall be adequate to perform surveying activities on an average size project. Personnel used by the firm shall have demonstrated experience and knowledge of standard surveying practices. Adequate equipment to provide digital data and computer graphics necessary for modern surveying practices must be available. (REVISED 3/02)

PHOTOGRAMMETRY AND RELATED SERVICES - A firm shall have the necessary equipment to produce photographic mapping in accordance with current Cabinet CADD standards and format. Personnel shall be adequately trained or have experience in aerial mapping and be of sufficient numbers to accommodate a reasonable schedule on any project. If any other firm is hired to subcontract the installation of monumentation and perform control surveys for the photogrammetry process, it is required that firm be on the KYTC prequalification list. A certified photogrammetrist shall be on staff and be responsible for the coordination of work on projects. (REVISED 1/08)

Engineering Service User - Structural Design Division (502-564-4560)

STRUCTURE DESIGN – Spans Less than 500 feet (Including Culvert Design) A firm will have a minimum of two (2) full-time (as defined by eligibility to participate in the firm's benefits programs) employees that are directly involved in structure design. Part-time employees may not be used to address the basic requirements for full-time staff. Part-time employees may be shown as a part of the total staff size. An explanation of the availability of part-time employees, including hours available throughout the year and hours available for projects, may be used to enhance the firm's experience history.

One (1) of the full-time employees must be a professional engineer licensed in Kentucky. The professional engineers submitted for prequalification will be directly involved in structural design. The licensed professional engineer will also

have experience in structure design as demonstrated by the successful completion of at least five (5) projects.

Firms that have not previously performed structure design for the Department may be required to submit sample plans for structures designed by the firm or by structural engineers employed by the firm.

STRUCTURE DESIGN – Spans Greater than 500 Feet – A firm will have a minimum of four (4) full-time (as defined by eligibility to participate in the firm's benefits programs) employees that are directly involved in structure design. Part-time employees may not be used to address those basic requirements for full-time staff. Part-time employees may be shown as a part of the total staff size. An explanation of the availability of part-time employees, including hours available throughout the year and hours available for projects, may be used to enhance the firm's experience history.

Two (2) of the full-time employees must be professional engineers licensed in Kentucky. The professional engineers submitted for prequalification will be directly involved in structure design of spans greater than 500 feet. The licensed professional engineers will also have experience in structure design as demonstrated by the successful completion of at least two (2) projects with spans greater than 500 feet.

A firm must demonstrate experience in designing bridges with span lengths greater than 500 feet by the submission of sample plans designed by the firm, or by structural engineers employed by the firm.

Engineering Service User - Traffic Operations Division (502-564-3020)

TRAFFIC ENGINEERING SERVICES – A firm must have a minimum of one (1) licensed professional engineer on staff who can demonstrate expertise in the field of traffic engineering. The following is a list of subjects in which a qualified traffic engineer would be knowledgeable:

- Traffic Flow Theory
- Urban Operations
- Geometric Design
- Accident Analysis
- Transportation Site Impact Analysis
- Isolated Traffic Signal and System Operation
- Highway Capacity
- Parking Studies and Characteristics
- Intersection Control (Non-Signalized and Signalized)

These subjects can be studied through individual courses or as a part of an overall course in traffic engineering. This knowledge can be obtained through courses offered by schools of recognized standing or organizations such as the Institute of Transportation Engineers and the Federal Highway Administration. Expertise may also be obtained through a minimum of five (5) years of professional engineering experience in the area of traffic engineering. Expertise may also be obtained through a combination of professional engineering experience in the highway design and/or construction area which is supplemented by continuing education workshops which include the subjects identified in the above listed criteria.

(REVISED 7/94)

ELECTRICAL ENGINEERING SERVICES – A firm must have a minimum of one (1) licensed professional engineer who can demonstrate experience in electrical engineering. The firm must demonstrate knowledge and experience in the areas of traffic signalization, traffic signal systems, and roadway and bridge lighting; including high-mast lighting. (REVISED 7/94)

Engineering and Related Service User - Construction Division (502-564-4780)

CONSTRUCTION PROJECT SUPERVISION - The Consultant shall provide engineering and engineering-related services to include detailed construction engineering and inspection of materials and workmanship for highway construction in accordance with current Department of Highways standards and procedures. Inspections must be familiar with Kentucky Standard Specifications and sampling and testing requirements.

The consultant engineering firm must provide a minimum of one (1) professional engineer with licensure in Kentucky, who can demonstrate highway construction knowledge and experience, on site as a Project Engineer. The firm must also be capable of providing home office support such as additional personnel, direction and equipment when necessary. (REV 7/94)

BRIDGE PAINTING PROJECT INSPECTION – The consultant firm shall provide the number of inspectors as requested by the Kentucky Transportation Cabinet for on-site field inspection of the bridge painting project. The inspector(s) will use paint inspection instruments, visual inspection, and industry standards to inspect the contractors' work and enforce the Kentucky Standard Specifications and Special Notes. The inspector(s) shall keep complete and accurate daily records of all work performed and the materials used in accordance with the Division of Construction Guidance Manual and guide lines set forth in the Kentucky Qualified Bridge Coatings Inspection Technician Training.

The inspection will include, but not be limited to, inspect all work for acceptance, document work activities and complete daily reports, provide visual and instrument inspections of surface preparation and coatings applications to ensure conformance to applicable specifications, containment and emissions monitoring, monitor work for compliance with KYOSHA, OSHA, EPA, and state guidelines as specified.

The firm will provide inspector(s) who have successfully completed the Kentucky Qualified Bridge Coatings must demonstrate experience and knowledge of on-site bridge painting inspection and recordkeeping. The inspector(s) must be capable of handling the physical requirements needed to access and perform arms length inspection of the entire project structure. (Rev 6/03)

BRIDGE PAINTING PROJECT MANAGEMENT – The Consultant shall provide bridge painting project management and related services to include detailed daily reporting, project coordination and contractor, and State/District personnel, FHWA/KMIMS pay estimates and inspection of workmanship in accordance with current Department of Highways standards, procedures, and project special notes. Manager and inspectors must be familiar with Kentucky Standard Specifications, Division of Construction Guidance Manual 63-01, partnering, sampling, testing and inspection requirements and project special notes.

The consultant firm must provide a minimum of one (1) Project Manager, who can demonstrate bridge painting project management/supervision, reporting, documentation and computation of pay estimates and inspection knowledge and experience, as an on-site project manager. The firm must be capable of providing home office support such as direction, additional support personnel, equipment and an on-site field office with computer and internet capabilities.

The firm shall provide on-site field inspection of the bridge painting project. The inspector(s) will use paint inspection instruments; visual inspection and industry standards to inspect the contractors work and enforce the Kentucky Standard Specifications and Special Notes. The inspector(s) shall keep complete and accurate daily records of all work performed and the materials used in accordance with the Division of Construction Guidance Manual and guidelines set forth in the Kentucky Qualified Bridge Coatings Inspection Technician Training.

The inspections will include but not be limited to: inspect all work for acceptance, document work activities, and complete daily reports, provide visual and instrument inspections of surface preparation, and coatings applications to ensure conformance to applicable specifications, containment and emissions monitoring, monitor work for compliance with KYOSAHA, OSHA, EPA, and state guidelines as specified.

The firm must provide an adequate number of inspectors to provide complete quality assurance field inspections. The inspectors will have successfully completed the Kentucky Qualified Bridge Coatings Inspection Technician Training and maintain their qualification for the duration of the project. The inspector(s) must demonstrate experience and knowledge of on-site bridge painting inspection and recordkeeping. The inspector(s) must be capable of handling the physical requirements needed to access and perform arms length inspection of the entire project structure. (Rev 6/03)

STRUCTURAL STEEL FABRICATION INSPECTION - The inspection will include performing all radiography, ultrasonic, magnetic particle and dye penetrate testing of welds as required and visual inspection to insure fabrication in accordance with applicable specifications Level Two nondestructive testing inspectors for magnetic particle and ultrasonic or radiographic testing. Consultant engineering firms must have a minimum of one (1) licensed professional engineer who can demonstrate knowledge and experience in welding theory, techniques, procedures, and inspections. Licensure in Kentucky is not necessarily required. (REVISED 7/94)

CONSTRUCTION SCHEDULING/CLAIMS ANALYSIS - The analysis shall consist of construction contract claims and scheduling to define issues and establish strategy of defense of claim; preparation and documentation of reports, graphics, charts, exhibits, and schedules; calculation and documentation of delays, recoverable damages, loss of productivity, inefficiencies, and other causes of claims.

Key staff members of the firms should consist of civil engineers, attorneys and certified public accountants experienced in claims review and evaluation. Consultant personnel must have at least five (5) years experience in claim review. The firm must have a minimum of one (1) licensed professional engineer who can demonstrate knowledge and experience in computerized construction project critical path scheduling. Engineers must be licensed, but not necessarily in Kentucky. (REVISED 7/94)

Engineering Service User - Planning Division (502-564-7183)

HIGHWAY PLANNING SERVICES - A firm shall provide all information for the individual areas for which pre-qualification is requested. An alphabetized listing of the firm's staff with appropriate professional status, areas in which each person works (i.e., highway, planning, environmental, etc.), and an identification of whether they are full-time or part-time employees shall be provided. A full-time employee is one who has eligibility to participate in the firm's benefits program. In addition, an officer of the firm must attest that the firm is financially solvent.

A firm shall provide evidence to the Kentucky Transportation Cabinet of:

- (1) knowledge of acceptable practices; and
- (2) prior experience in the last ten years in highway planning activities to include:
 - collection or acquisition, processing, and presentation of transportation-related data;
 - analysis of transportation-related data;
 - traffic forecasting;
 - identification of highway deficiencies and needs;
 - development and evaluation of alternative solutions to meet those needs;
 - preparation of cost estimates for proposed improvements;
 - selection and scheduling of recommended improvements;
 - public involvement; and
 - financial analysis to identify and evaluation funding priorities and options for proposed improvements.

Information relating to past experience in those areas listed above shall be submitted for the firm's current staff. This information should include applicable education, training, and work experience. The employees in the firm primarily responsible for the project should be identified and their roles should be clearly explained.

Projects shown in a firm's experience that are not for the Kentucky Transportation Cabinet shall include the name of an individual directly responsible for the project, and any performance evaluations or other documentation received at the conclusion of the project.

In addition, a minimum of one (1) report by the firm shall be submitted showing evidence of the requirements in Item A. The firm shall provide a listing of all equipment available for the development of product deliverables; including hardware and software, and demonstrate the firm's knowledge and previous use of data collection, mapping and/or other equipment and programs, as needed.

TRANSPORTATION CORRIDOR & SYSTEMS PLANNING – A firm shall provide all information for the individual areas for which pre-qualification is requested. An alphabetized listing of the firm's staff with appropriate professional status, areas in which each person works (i.e., highway, planning, environmental, etc.), and an identification of whether they are full-time or part-time employees shall be provided. A full-time employee is one who has eligibility to participate in the firm's benefits program. In addition, an officer of the firm must attest that the firm is financially solvent.

A firm shall provide evidence to the Kentucky Transportation Cabinet of:

(1) knowledge of acceptable practices; and

(2) prior experience in the last ten years in the following:

(a) multimodal transportation planning at the project and systems level, with particular emphasis on the highway mode, to include:

- collection or acquisition, processing, and presentation of transportation-related data;
- analysis of transportation-related data;
- identification of deficiencies and needs;
- forecasts of traffic and/or other transportation-related data;
- development and evaluation of alternative solutions to meet those needs;
- preparation of cost estimates for improvements;
- selection and scheduling of recommended improvements; and
- public involvement;

(b) economic analysis to evaluate the economic justification of proposed improvements, with emphasis on identifying and comparing all costs and benefits, including:

- facility management and maintenance costs and benefits;
- user costs and benefits;
- social and environmental costs and benefits due to business transfers and the generation of new business;
- as well as subsequent impacts developed through econometric modeling or other economic tools, as appropriate; and

(c) financial analysis to identify and evaluate all possible funding options to determine the financial feasibility of proposed improvements.

Information relating to past experience in those areas listed above shall be submitted for the firm's current staff. This information should include applicable education, training, and work experience. The employees in the firm primarily responsible for the project should be identified and their roles should be clearly explained.

Projects shown in a firm's experience that are not for the Kentucky Transportation Cabinet shall include the name of an individual directly

responsible for the project, and any performance evaluations or other documentation received at the conclusion of the project.

In addition, a minimum of one (1) report prepared by the firm shall be submitted showing evidence of the requirements listed in Item A. If a firm does not have the required experience in economic analysis, they may acquire it through an outside source. In this case, the experience of the outside source must be documented, along with a sample report showing evidence of the required experience. A brief explanation of the anticipated contractual arrangements between the firm and the source of the econometric analysis experience should be documented.

The firm shall provide a listing of all equipment available for the development of product deliverables, including hardware and software, and document or demonstrate the firm's knowledge and previous use of data collection, mapping, and/or other equipment and programs, as needed.

ROAD CENTERLINE DATA COLLECTION - A firm shall provide all information for the individual areas for which pre-qualification is requested. An alphabetized listing of the firm's staff with appropriate professional status, areas in which each person works (i.e., highway, planning, environmental, etc.), and an identification of whether they are full-time or part-time employees shall be provided. A full-time employee is one who has eligibility to participate in the firm's benefits program. In addition, an officer of the firm must attest that the firm is financially solvent.

A firm shall provide evidence to the Kentucky Transportation Cabinet of:

(1) knowledge of acceptable practices; and

(2) prior experience in the following:

- Road Centerline data collection collected in accordance with the Standards for Road Data Collection Using Global Positioning System Techniques located at the following web site:

<http://www.kytc.state.ky.us/planning/hisourky/Documents/Standardsall.pdf>

- Mobile data collection using GPS spatial technologies.

Precision estimates should be used as a gauge of quality and repeatability and not to be misconstrued as a measurement to or from true feature location. The GPS coverage shall establish a current, accurate digital transportation data set. The centerline data will be exported into ARC/INFO or its equivalent and converted into an arc coverage, edited, attributed, and projected.

Information relating to past experience in those areas listed above shall be submitted for the firm's current staff. This information should include applicable education, training, and work experience. The employees in the firm primarily responsible for the project should be identified and their roles should be clearly explained.

Projects shown in a firm's experience that are not for the Kentucky Transportation Cabinet shall include the name of an individual directly responsible for the project, and any performance evaluations or other documentation received at the conclusion of the project.

The firm shall provide a listing of all equipment available for the development of product deliverables, including hardware and software, and document or demonstrate the firm's knowledge and previous use of data collection, mapping, and/or other equipment and programs, as needed. The road centerline data is to be collected using equipment compatible with, or equal to, a twelve channel integrated GPS/SBAS (Satellite Based Augmentation System) Trimble ProXH receiver with TerraSync data collection software. Centerlines are to be captured as line features with a collection interval of one position per second. Road intersections and NGS control points shall use a field devices and field software that is compatible with the GPS receiver. All rover files shall be differentially corrected with Horizontal Root Mean Squared (HRMS) accuracy. Consultant shall use software compatible with or equal to Trimble's pathfinder office software to predict the precision of both individual observations and entire features. These estimates should be HRMS based. The average horizontal 2dHRMS values for road centerline data and point features shall be less than or equal to 2 meters.

TRAFFIC DATA COLLECTION - A firm shall provide all information for the individual areas for which pre-qualification is requested. An alphabetized listing of the firm's staff with appropriate professional status, areas in which each person works (i.e., highway, planning, environmental, etc.), and an identification of whether they are full-time or part-time employees shall be provided. A full-time employee is one who has eligibility to participate in the firm's benefits program. In addition, an officer of the firm must attest that the firm is financially solvent.

A firm shall provide evidence of:

1. the firm's knowledge of acceptable traffic data collection practices.
2. a listing of the firm's current staff members and their prior experience collecting traffic data.
3. a listing of the firm's previous completed projects in which they collected traffic data.
4. a listing of all equipment used for traffic data collection owned by the firm.

Information relating to past experience in those areas listed above shall be submitted for the firm's current staff. This information should include applicable education, training, and work experience. The employees in the firm primarily responsible for the traffic data collection should be identified and their roles should be clearly explained.

Projects shown in a firm's experience that are not for the Kentucky Transportation Cabinet shall include the name of an individual directly responsible for the project, and any performance evaluations or other documentation received at the conclusion of the project. The firm shall provide a listing of all equipment available for the development of product deliverables; including hardware and software, and demonstrate the firm's knowledge and previous use of data collection, mapping, and/or other equipment and programs, as needed.

Traffic data includes Volume, Axle Classification, Speed and Length Data. It is to be collected according to the guidelines set forth in the current edition of the Federal Highway Administration's (FHWA) Traffic Monitoring Guide (TMG). Equipment used by the Kentucky Transportation Cabinet (KYTC), Division of Planning, is the Peek ADR Traffic Data Recorders.

Data is to be provided to KYTC in the following formats:

- ADR binary files (if Peek ADR Traffic Data Recorders are used);
- Peek's Daily; and

Classification Data

Axle classification data is to be collected using FHWA Scheme "F" 13 plus 2 bins. are as follows:

- Motorcycles
- Passenger Cars - All sedans, coupes and station wagons
- Other 2-Axle, 4-Tire Single Unit Vehicles excluding passenger cars.
- Buses - buses with two axles and 6 tires or 3 or more axles
- Two-Axle, Six-Tire Single Unit Trucks
- Three-Axle Single Unit Trucks
- Four or More Axle Single Unit Trucks
- Four or Less Axle Single Trailer Trucks
- Five-Axle Single Trailer Trucks
- Six or More Axle Single Trailer Trucks
- Five or Less Multi-Trailer Trucks
- Six-Axle Multi Trailer Trucks
- Seven or More Axle Multi-Trailer Trucks
- (reserved for future)
- Unknown vehicles

Speed Data

Speed data is to be collected in 13 bins. Bins are as follows:

- <25 MPH
- 25 - 29 MPH
- 30 - 34 MPH
- 35 - 39 MPH
- 40 - 44 MPH
- 45 -49 MPH
- 50 -54 MPH
- 55 - 59 MPH
- 60 - 64 MPH
- 65 - 69 MPH
- 70 - 74 MPH
- 75 - 79 MPH
- >80 MPH

Speed data can be collected at any classification site.

Length Data

Length data is to be collected in 4 bins. Bins are as follows:

- <25 Feet
- 25 to 49.9 Feet
- 50 to 54.9 Feet
- >54.9 Feet

Length data can be collected at any classification site.

TRAFFIC FORECASTING - A firm shall provide all information for this individual area for which pre-qualification is requested. An alphabetized listing of the firm's staff with appropriate professional status, areas in which each person works (i.e., highway, planning, environmental, etc.), and an identification of whether they are full-time or part-time employees shall be provided. A full-time employee is one who has eligibility to participate in the firm's benefits program.

A firm shall provide evidence to the Kentucky Transportation Cabinet of:

1. Knowledge and experience in the development of KY ESAL methods, forecasting needs for various project phases, and generally accepted traffic forecasting parameters.

2. Knowledge and experience with generating DHV, PHF, K-factors, D-factors, truck percentages as well as turn movement development from manual and automatic counts.
3. Knowledge and experience in the use of traffic demand models for appropriate forecasting studies.
4. Availability of and experience with state-of-the-art traffic modeling software such as our preferred software, TransCAD (a Caliper product).
5. Availability of and experience with state-of-the-art simulation modeling software such as our preferred software, TransModeler (a Caliper product).
6. A professional engineer licensed in Kentucky with experience in traffic forecasting as defined herein who will be directly involved the proposed work.
7. Availability of and experience to collect traffic data that may be necessary for the purpose of completing a forecast. Data shall be in a format that is compatible with the Cabinet's existing database.
8. Traffic forecasting experience shall include pavement design forecasts, estimation of residual traffic, forecasts for turn lane geometries, bypass studies, interchange justification studies, road user cost analysis for detours, environmental analysis forecasts, and interchange studies.
9. Sub-consultants shall be pre-qualified in their proposed work.

Information relating to past experience in those areas listed above shall be submitted for the firm's current staff. This information should include applicable education, training, and work experience. The employees in the firm primarily responsible for the project should be identified and their roles should be clearly explained.

Signal timing studies, traffic impact studies, project scoping studies, micro-simulation studies, level of service (LOS) analysis, as well as environmental and design work will not be considered as experience for traffic forecasting studies. Any qualifying experience contained in these types of work shall be specifically identified in the request for prequalification.

Qualifying experience should be within the last five (5) years and the work should have been performed for the Kentucky Transportation Cabinet, another state highway agency, the Federal Highway Administration, a metropolitan planning organization, or major local public works agency. KYTC's assessment of staff capabilities and overall performance on previous work known to Cabinet staff, including quality of work and timely completion, will also be considered.

Projects shown in a firm's experience that are not for the Kentucky Transportation Cabinet shall include the name of an individual directly responsible for the project, and any performance evaluations or other documentation received at the conclusion of the project.

In addition, a minimum of one (1) report by the firm shall be submitted showing evidence of the above requirements. The firm shall provide a listing of all equipment available for the development of product deliverables; including hardware and software, and demonstrate the firm's knowledge and previous use of data collection, mapping, and/or other equipment and programs, as needed.

TRAVEL DEMAND AND SIMULATION MODELING - A firm shall provide all information for this individual area for which pre-qualification is requested. An alphabetized listing of the firm's staff with appropriate professional status, areas in which each person works (i.e., highway, planning, environmental, etc.), and an identification of whether they are full-time or part-time employees shall be provided. A full-time employee is one who has eligibility to participate in the firm's benefits program.

A firm shall provide evidence to the Kentucky Transportation Cabinet of:

1. Knowledge and experience in the development of comprehensive regional, county, and community travel demand models.
2. Knowledge and experience in the development and analysis of existing and future networks.
3. Knowledge and experience in the development and analysis of simulation models for traffic operational studies.
4. Availability of and experience with state-of-the-art traffic modeling software such as our preferred software, TransCAD (a Caliper product).
5. Availability of and experience with state-of-the-art simulation modeling software such as our preferred software, TransModeler (a Caliper product).
6. Experience in the development and calibration/validation of traffic demand or simulation models.
7. Availability of GIS software and experience with mapping and transportation related applications.
8. Ability to collect/acquisition, process, analyze, and present population and socio-economic travel demand model related data.
9. Ability to collect traffic data that may be necessary for the purpose of model calibration. Data shall be in a format that is compatible with the Cabinet's existing database.
10. Experience in the use of traffic demand models
 - a) For analysis of existing and future networks;
 - b) For development of traffic operational plans
 - c) For creation of long-range transportation plans
11. Sub-consultants shall be pre-qualified in their proposed work.

Information relating to past experience in those areas listed above shall be submitted for the firm's current staff. This information should include applicable education, training, and work experience. The employees in the firm primarily

responsible for the project should be identified and their roles should be clearly explained.

Qualifying experience should be within the last five (5) years and the work should have been performed for the Kentucky Transportation Cabinet, another state highway agency, the Federal Highway Administration, a metropolitan planning organization, or major local public works agency. KYTC's assessment of staff capabilities and overall performance on previous work known to Cabinet staff, including quality of work and timely completion, will also be considered.

Projects shown in a firm's experience that are not for the Kentucky Transportation Cabinet shall include the name of an individual directly responsible for the project, and any performance evaluations or other documentation received at the conclusion of the project.

In addition, a minimum of one (1) report by the firm shall be submitted showing evidence of the above requirements. The firm shall provide a listing of all equipment available for the development of product deliverables; including hardware and software, and demonstrate the firm's knowledge and previous use of data collection, mapping, and/or other equipment and programs, as needed.

Engineering Service User – Office of Special Programs (502-564-2060)

BIKEWAY PLANNING

Part time employees may not be used to address the basic requirement for full-time staff. Part-time employees may be shown as a part of the total staff size. An explanation of the availability of part-time employees including hours available through the year and hours available for projects may be used to enhance the firms experience history. (Rev 9/03)

The full-time employee must be directly involved in the proposed bikeway planning work. Previous experience in bikeway planning work and related activities must be shown and substantiated. Previous related activities could include transportation planning or corridor studies, various types of other planning work, etc. The number of planners on staff will be considered. If this experience involved other firms or agencies, the employee's role should be clearly explained for each project. Applicable education and technical training shall also be provided. Completion of a Bicycle Facility Planning and Design Workshop could substitute for previous related work activities.

Information relating to past experience may also be provided for each additional employee to be considered for prequalification. The information detailed for the above should be provided for these employees. Projects shown in a firm's

experience that are not for the Kentucky Department of Highways shall include the name of an individual directly responsible for the project and any performance evaluations or other documentation received at the conclusion of the project.

The firm shall provide a listing of all equipment available for the studies including hardware and software and demonstrate their knowledge and previous use of the indicated programs.

KYTC's personal knowledge of the firm's previous work and staff abilities will also be considered.

The firm should provide a cover sheet, or separate section of their submittal, that lists the previous relevant bikeway planning work and the previous relevant related work activities. (REVISED 3/02)

The firm shall demonstrate experience in planning a connected network of bike facilities.

The firm shall provide have at least one Professional Engineer licensed in KY and that has worked on or supervised a bikeway project.

**Engineering and Related Service User
Office of Transportation Delivery
(502-564-7433)**

**MULTIMODAL SERVICES/TRANSIT TECHNICAL STUDIES, MANAGEMENT
AND MARKETING/ADVERTISING**

Prior experience and knowledge in transit studies, urban transportation studies, and computerized transit software. Prior experience in marketing and advertising for transit systems. Knowledge of Urban Mass Transportation administration procedures. (REVISED 7/94)

**Engineering and Related Service User –
Traffic Operations Division – ITS Branch
(502-564-3020)**

INTELLIGENT VEHICLE/HIGHWAY SYSTEM (IVHS)

Intelligent Transportation Systems (ITS)/Central Concepts

These categories of engineering and engineering-related services are generally defined as the application of advanced computing and communication

technologies to the transportation field. Any firm desiring ITS prequalification must meet the following Central Business Requirements (CBR): ITS National Architecture and Kentucky Information Technology Architecture Conformance. The firm shall provide service in support of, and in conformance with, these architectures. The firm shall demonstrate and maintain such expertise in these architectures as to work cooperatively with the Commonwealth and perform the contracted services:

Technology Awareness and Proficiency - The firm is expected to demonstrate and continually build its awareness of, and proficiency in, their contracted service category to enable a timely and professional response to Commonwealth needs;

Emerging Technologies - The Commonwealth will look to the ITS consultant community to provide leadership and expertise in evaluating emerging technologies. The firm is expected to continually maintain an awareness of emerging technologies and provide the Commonwealth with information on project experience, research and development;

Project Management Proficiency - The firm is to present and maintain adeptness at Project Management through project performance and the use of proven methods and techniques;

Working Knowledge of the Commonwealth - The firm is to develop and maintain broad-base knowledge of the Cabinet. This is to include goals, strategic and tactical plans and priorities, service delivery operations, and other business requirements;

Public Sector Experience - The firm is desired to have extensive public sector experience in the planning, implementing, and managing of technology resources. The firm shall be knowledgeable of applicable state and federal laws, funding requirements, and regulations in support of ITS issues;

Technical Capacity - The firm shall demonstrate and maintain the expertise, awareness, and proficiency in their contacted service category to enable timely response to Commonwealth needs; and

Business Resources - The firm shall demonstrate and maintain the financial capacity, capital, or other resources; and the administrative controls and policies to perform the service. The firm may be required to substantiate fiscal soundness and administrative controls satisfactory to perform the service.

A full service (FS) consultant is defined as a firm with both the technical capacity and the business resource capacity to perform the services. A niche service (NS) consultant is defined as a firm with unique technical expertise or capacity to perform the services. Firms may qualify under both so long as they meet the individual criteria.

SERVICE/USE CONCEPT MATRIX

Intelligent Transportation Systems (ITS)/ITS System Integrator

Concepts - Full service consultant who can take a vision or concept and develop an application/project to maturity and continue to operate the system.

This category of work is defined as the integration of advanced computer communications and control technologies for advanced transportation information management applications and technologies. This work includes the planning, designing, deploying/building, and operating an application or project. A firm petitioning to become prequalified in this area shall demonstrate competence in, and be capable of, providing the following:

Technical Capacity - the necessary engineering and engineering-related services in each of the following areas: ITS Architecture Development, Project Planning and Design, Project Management, Systems Integration, Project/Installation Management, Procurement and installation, Software Development/Modification, Operations, and training; and

Business Resources - the necessary financial capacity, capital, or other resources; and the administrative controls and policies to perform the service.

The firm shall employ:

A minimum of one (1) professional engineer with a background in transportation and traffic engineering, and experienced in the activities associated with the planning, development, management, and operations of related advanced transportation technologies who maintains the appropriate technology awareness and proficiency;

Additional professionals with backgrounds in electrical and systems engineering, human factors, public relations, group facilitation, computer science, and systems integration sufficient to perform the contracted services who maintain the appropriate technology awareness and proficiency;

Sufficient administrative staff to perform the contracted services; and

Sufficient financial staff and resources to perform the contracted services.

Additionally, the firm shall have a member of the project team who has completed the USDOT "Using the National IT Architect for Deployment" training Course.

Intelligent Transportation Systems (ITS)/ITS Architecture Development

Concepts – Niche service consultant who can take a vision of concept and develop on ITS architecture.

This category of work is defined as the research, planning, design and development of ITS Architectures for multi-state, statewide, regional, corridor, or project planning. A firm petitioning to become prequalified in this area shall demonstrate competence in and be capable of providing the following:

Identification of key stakeholders and their interrelationships including data collection and analysis;

Description of the required activities or functions;

Description of the interconnections and interdependencies between functions;

Definition of a blueprint for the integration of all systems; and

Completion of proposed architecture.

The firm shall employ:

A minimum of one (1) professional engineer with a background in transportation and traffic engineering and experienced in the activities associated with the researching, planning, designing, and development of ITS Architectures who maintains the appropriate technology awareness and proficiency;

Additional professionals with backgrounds in electrical and systems engineering, human factors, public relations, group facilitation, computer science, and systems integration sufficient to perform the contracted services who maintain the appropriate technology awareness and proficiency;

Additionally, the firm shall have a member of the project team who has completed the USDOT “Using the National ITS Architecture for Deployment: training course.

Intelligent Transportation Systems (ITS)/ITS Concept Development Feasibility Studies

Concepts - Niche service consultant who can take a vision or concept and research/evaluate potential advanced solutions.

This category of work is defined as the researching/investigating and identifying/evaluating potential advanced technology solutions and emerging

technologies to transportation needs. This work includes the research, planning, and design of an application/project.

A firm petitioning the following:

Leadership and expertise in evaluating and developing emerging technologies;

Identification of the problem areas and risk factors and their interrelationships;

Investigation of the technologies or functions, including data collection and analysis, to solve the problems;

Identification of the interconnections and interdependencies between technologies or functions;

Consideration of the feasibility of real-world implementation; and

Completion of proposed development or study.

The firm shall employ:

A minimum of one (1) professional engineer with a background in transportation and traffic engineering and experienced in the activities associated with the researching, planning, designing, and developing of ITS projects who maintains the appropriate technology awareness and proficiency;

Additional professionals with backgrounds in electrical and systems engineering, human factors, transportation planning, group facilitation, computer science, and systems integration sufficient to perform the contracted services who maintain the appropriate technology awareness and proficiency;

Additionally, the firm shall have a member of the project team who has completed the USDOT "Using the National ITS Architecture for Deployment" training course.

Intelligent Transportation Systems (ITS)/ITS Communications Planning and Development Concepts - Niche Service consultant who can take a vision or concept and research/evaluate, plan, design, and develop advanced communications applications/projects.

This category of work is defined as the research, planning, design, and development/building of ITS communications projects or systems for multi-state, statewide, regional, corridor, or project development.

A firm petitioning to become prequalified in this area shall demonstrate competence in, and be capable of, providing the following:

Identification of the problem areas, the key stakeholders, and their interrelationships;

Description of the required activities of functions to solve the problems;

Definition of the interconnections and interdependencies between functions; and

Completion of a plan/design for the integration of all systems.

The firm shall employ:

A minimum of one (1) professional engineer with a background in communications and experienced in the activities associated with the researching, planning, designing, and developing of ITS communications project who maintains the appropriate technology awareness and proficiency;

Additional professionals with backgrounds in electrical and systems engineering transportation and traffic engineering, human factors, computer science, and systems integration sufficient to perform the contracted services who maintain the appropriate technology awareness and proficiency;

Additionally, the firm shall have a member of the project team who has completed the USDOT "Using the National ITS Architecture for Deployment" training course.

Intelligent Transportation Systems (ITS)ITS System Design/Deployment

Concepts - Niche service consultant who can take a study or plan and develop in-depth design/deployment of a system.

This category of work is defined as the in-depth design and deployment of advanced transportation technology systems. A firm petitioning to become prequalified in this area shall demonstrate competence in, and be capable of, providing the following:

Identification of the problem areas and risk factors and their interrelationships;

Description of the required activities or functions to complete the design;

Understanding of the design standards;

Completion of design including the integration and development of the system; and

Deployment of the technology system.

The firm shall employ:

A minimum of one (1) professional engineer with a background in traffic and design engineering; and experienced in the activities associated with the researching and designing of advanced transportation technology systems who maintains the appropriate technology awareness and proficiency;

Additional professionals with backgrounds in electrical and systems engineering, human factors, computer science, and systems integration sufficient to perform the contracted services who maintain the appropriate technology awareness and proficiency;

Additionally, the firm shall have a member of the project team who has completed the USDOT "Using the National ITS Architecture of Deployment" training course.

Intelligent Transportation Systems (ITS)/ITT Management and Operations

Concepts – Niche Service consultant who can manage and operate existing systems.

This category of work is defined as the management and operations of advanced transportation technology/systems in accordance with applicable project design and generally described in ITE Publication RP-030A.

A firm petitioning to become pre-qualified in this area shall demonstrate competence in and be capable of providing the following:

Actions necessary for the proper functioning of the system (Operations);

Actions performed on an as needed basis (Response Maintenance);

Actions performed on a regularly scheduled basis (Preventative Maintenance);

Actions invoked to correct a recurring problem (Design Modification); and

Resources allocated for the proper functioning of the system (Management).

The firm shall employ:

A minimum of one (1) professional engineer with a background in transportation and traffic engineering experienced in the activities associated with the managing and operating a transportation technology/systems who maintains the appropriate technology awareness and proficiency;

Additional professionals with backgrounds in electrical and systems engineering, transportation and traffic engineer, human factors, computer science, and systems integration sufficient to perform the contracted services who maintain the appropriate technology awareness and proficiency;

Additionally, the firm shall have a member of the project team who has completed the USDOT "Using the National ITS Architecture for Deployment" (REV 3/02)

Intelligent Transportation Systems (ITS)/ITT Technology/System Evaluation

Concepts - Niche service consultant who can independently research and evaluate advanced technology/systems.

This category of work is defined as the independent research and evaluation of advanced transportation technology/systems in accordance with applicable project evaluation guidelines.

A firm petitioning to become pre-qualified in this area shall demonstrate competence in and be capable of providing the following:

Independent identification of the problem areas and their interrelationships;

Clear understanding of the activities or functions associated with project;

Independent data collection and analysis; and

Completion of the evaluation in accordance with the applicable evaluation guidelines.

The firm shall employ:

A minimum of one (1) professional engineer with a background in transportation and traffic engineering experienced in the activities associated with the researching and evaluating advanced transportation technology/systems who maintains the appropriate technology awareness and proficiency;

Additional professionals with backgrounds in electrical and systems engineering, transportation and traffic engineering, human factors, computer science, and systems integration sufficient to perform the contracted services who maintain the appropriate technology awareness and proficiency;

Additionally, the firm shall have a member of the project team who has completed the USDOT "Using the National ITS Architecture for Deployment" training Course. (REVISED 3/02)

CONGESTION MANAGEMENT ENGINEERING – A firm shall have a minimum staff of one (1) full-time employee as defined above that is directly involved in activities relating to congestion mitigation projects. Part-time employees may not be used to address the basic requirement for full-time staff. Part-time employees may be shown as part of the total staff size. An explanation of the availability of part-time employees, including hours available through the year and hours available for projects, may be used to enhance the firms experience history.

A professional engineer licensed in Kentucky must be included in the mix of full-time employees dedicated to the project. The professional engineer submitted for prequalification shall be directly involved in the congestion mitigation activities. Previous experience in congestion mitigation work and related activities must be shown. It must also include experience with urban transportation studies, ITS planning, traffic demand modeling, traffic stimulation modeling and Air Quality Conformity analysis, etc. If this experience involved other firms or agencies, the employee's role should be clearly explained for each project. Applicable education and technical training shall also be provided.

Information relating to past experience may also be provided for each additional employee to be considered for prequalification. The information detailed above for Item B should be provided for these employees.

Projects shown in a firm's experience that are not for the Kentucky Department of Highways shall include the name of an individual directly responsible for the project and any performance evaluations or other documentation received at the conclusion of the project.

The firm shall provide a listing of all equipment available for the work including hardware and software and demonstrate their knowledge and previous use of the indicated programs. KYTC's personal knowledge of the firm's previous work and staff abilities will also be considered

**Engineering and Related Service User-
Structural Design Division - Geotechnical Branch
(502-564-2374)**

Complete up to date criteria for Geotechnical Services can be found in the Geotechnical Guidance Manual - Section GT 902

GEOTECHNICAL DRILLING SERVICES

GENERAL REQUIREMENTS: Firms must submit the [TC 66-209 form](#), *Prequalification Requirements for Geotechnical Drilling Services*

EXPERIENCE: The vendor must provide evidence of experience in the last five (5) years performing drilling services for highway projects (roadways and bridges).

The evidence shall include a listing of:

- _ Projects illustrating this type of experience
- _ References (agency, project engineer, or consultant) with addresses and phone numbers

EQUIPMENT: The vendor must provide a list of available equipment (drill rigs and accessories) for soil sampling and rock coring. The vendor must have at least one (1) drill rig equipped with an automatic hammer in order to be prequalified.

PERSONNEL: Drill crew supervisors must be experienced in the following:

- _ Obtaining rock cores for rock cut slope and bridge foundation design
- _ Performing a soil profile
- _ Performing rock line soundings
- _ Performing standard penetration tests
- _ Obtaining thin-walled tube samples
- _ Installing cased observation wells

Evidence must be provided that the drill crew supervisors have a minimum of (3) three years' experience in the above-mentioned operations for highway projects (roadways and bridges). A drill crew supervisor is defined as the person on the drill crew field party who is responsible for the drilling operations mentioned above.

INSURANCE: Vendors must have Workers' Compensation and Liability Insurance as required by the Division of Professional Services.

GEOTECHNICAL ENGINEERING SERVICES

GENERAL REQUIREMENTS: Firms must submit the [TC 66-210 form](#), *Prequalification Requirements for Geotechnical Engineering Services* to document that they meet the requirements of having:

- A firm permit issued by the Kentucky Board of Licensure for Professional Engineers and Land Surveyors
- Sufficient geotechnical engineering experience as demonstrated by having performed geotechnical engineering on a minimum of three (3) transportation projects (or other projects where related engineering tasks were performed) in the last five (5) years
- MicroStation CADD software

PERSONNEL REQUIREMENTS: The firm must have personnel meeting the following requirements:

- At least one professional engineer licensed in Kentucky with a minimum of (3) three years' of geotechnical engineering experience applicable to the design and/or construction of highway facilities (demonstrated by performing tasks included on Page 3 of the [TC 66-210 form](#)). The firm will be required to assign at least one person meeting these requirements to actively participate in KYTC geotechnical projects in the capacity of project manager, project engineer, etc.
- At least one professional geologist licensed in Kentucky with a minimum of (3) three years' of engineering geology experience applicable to the design and/or construction of highway facilities (demonstrated by performing tasks included on Page 3 of the [TC 66-210 form](#)).

- Staff with sufficient experience to perform geotechnical engineering tasks for KYTC, as demonstrated by experience in a minimum of 9 of the 12 areas of "conventional" experience included on Page 3 of the [TC 66-210 form](#). (Seismic experience is not required.)
- A minimum of one (1) CADD operator proficient with MicroStation.

GEOTECHNICAL LABORATORY TESTING SERVICES

GENERAL REQUIREMENTS: Firms must submit the [TC 66-211 form](#), *Prequalification Requirements for Geotechnical Laboratory Testing Services* to document that they meet these requirements.

ACCREDITATION: Accreditation by the AASHTO Materials Reference Laboratory (AMRL) is required for the following AASHTO Test Methods:

- T87
- T88
- T89
- T90
- T99
- T100
- T193
- T208
- T265
-

The Geotechnical Branch will verify accreditation on the AMRL Web site during the prequalification review.

PERSONNEL: Management and staff are to meet the requirements for AASHTO R18 accreditation and have experience performing all the above-referenced tests.

LOADING DEVICE: Vendors are required to have a loading device with a movable head or base such that it is capable of applying a compressive load up to 60,000 pounds (267 kilonewtons), as required for the compaction portion of **KM 64-501** (Kentucky Method for performing the California Bearing Ratio Test).

ADDITIONAL TEST METHODS: In addition to the above-referenced test methods, the Geotechnical Branch considers the following to be highly desirable:

- AMRL accreditation for the following tests:
 - T216
 - T296
 - T297

- Capability to perform the following tests:
 - Unconfined Compressive Strength of Rock
 - Slake Durability
 - Jar Slake

Although these tests are not required for prequalification, the Geotechnical Branch strongly recommends that labs be accredited for and/or have the ability to perform these tests.

ADDITIONAL DOCUMENTS: Although the Geotechnical Branch does not always require that additional documents be submitted for prequalification, the vendor is to be prepared to provide such documents upon request. Accreditation documents that may be requested include:

- Quality Manual
- On-Site Assessment Reports
- Proficiency Sample Test Results
- Other applicable documentation

**Engineering and Related Service User
Maintenance Division - Bridge Maintenance Branch
(502-564-4556)**

BRIDGE MAINTENANCE SERVICES/INDEPTH STRUCTURE INSPECTION -

To be pre-qualified for in-depth inspection, the consultant must meet the following requirements:

Demonstrate structural design competence.

Demonstrate experience with performing inspections for NBIS purposes, or demonstrate an understanding of NBIS requirements for such inspections by demonstrating knowledge of the FHWA Bridge Inspectors Training Manual 70 (or later edition) and the Recording and Coding Guide for Structural Inventory and Appraisal of the Nations Bridges; and

Demonstrate an understanding of the access requirements and traffic control ramifications of conducting such inspections by providing a narrative describing what types of access equipment might be required and how traffic control would be handled (which should identify whether these can be provided in-house or obtained through other means). (REVISED 3/02)

BRIDGE MAINTENANCE SERVICES/UNDERWATER STRUCTURE INSPECTION – To be prequalified for underwater structure inspection, the consultant must meet the following requirements:

Demonstrate experience with performing inspections for NBIS purposes or demonstrate an understanding of NBIS requirements for such inspections by demonstrating knowledge of the FHWA Bridge Inspectors Training Manual 70 (or later edition) and the Recording and Coding Guide for Structural Inventory and Appraisal of the Nations Bridges; and

Have a staff member who is a Kentucky licensed professional engineer and also a diver because all underwater inspections are required to be performed by a professional engineer. (REVISED 3/02)

BRIDGE MAINTENANCE SERVICES/ENVIRONMENTAL MONITORING, WASTE MANAGEMENT AND PAINT INSPECTION – To be pre-qualified for this type of work, the consultant must demonstrate experience with this type of project including the following:

Developing plans for removing hazardous paint systems that meet EPA requirements. This shall include preliminary testing as required, environmental monitoring as required during construction, designing required containment techniques, and preparing contractor plans;

Performing construction inspection of the contractor's painting; and

Overseeing the collection and disposal of any hazardous material generated by the project. (REVISED 7/94)

Engineering Service User - Department of Aviation (502-564-4480)

AVIATION SERVICES - The firm in question will have in its permanent employment a professional engineer licensed in the Commonwealth of Kentucky. Knowledge and prior experience in the areas of aviation systems planning, airport master planning, airport design, airport development project construction inspection and/or airport noise analysis and the requirements and procedures of the Federal Aviation Administration is required. (REVISED 7/94)

**Engineering and Related Service User
Environmental Analysis Division
(502-564-7250)**

ENVIRONMENTAL SERVICES/FISHERIES

EDUCATION GRADUATE AND UNDERGRADUATE TRANSCRIPTS REQUIRED

BS in Biology or Environmental Science including thirty (30) semester hours in biology with 3 three-hour courses related to fisheries such as fisheries biology, limnology, fisheries management, fisheries science, ecology, and ichthyology.*

QUALIFYING EXPERIENCE PRESENT CURRICULUM VITAE

4 years with a BS

2 years with an M S

2 years with a Ph.D.**

Qualifying experience is considered to be work having to do with the ecology or biology of freshwater fish.

It must include the following:

1. A field study, publication or presentation at a scientific meeting demonstrating a knowledge of the taxonomy, sampling and ecology of freshwater fish.
2. One-year experience in the assessment of impacts of construction projects on aquatic life, including mitigation measures.
3. Work indicating a knowledge of Kentucky and Federal rare, threatened, and endangered species of freshwater fish.

EQUIPMENT LIST

1. Taxonomic references sufficient to identify the fishes of Kentucky to species level.
2. Seines.

*Experience may substitute for education in exceptional cases if expertise in area can be proven by written examples of work.

**Ph.D. dissertation may substitute for (1) one year's experience if it involved the biology or ecology of freshwater fish. (REVISED 11/98)

ENVIRONMENTAL/FRESHWATER MACROINVERTEBRATES

EDUCATION GRADUATE AND UNDERGRADUATE TRANSCRIPTS REQUIRED

BS in Biology or Environmental Science including thirty (30) semester hours in biology with 3 three-hour courses related to the taxonomy and biology of

macroinvertebrates of freshwater lakes and streams and 2 three-hour courses related to aquatic biology or aquatic ecology.*

QUALIFYING EXPERIENCE PRESENT CURRICULUM VITAE

4 years with a BS
2 years with an MS
2 years with a Ph.D.**

Qualifying experience is considered to be work having to do with the ecology or biology of freshwater invertebrates.

It must include the following:

1. A field study, publication or presentation at a scientific meeting demonstrating a knowledge of the taxonomy, sampling, and ecology of freshwater invertebrates.
2. One-year experience in the assessment of impacts of construction projects on aquatic life, including mitigation measures.
3. Work indicating a knowledge of Kentucky and Federal rare, threatened, and endangered species of aquatic invertebrates.

EQUIPMENT LIST

1. Taxonomic references sufficient to identify most aquatic invertebrates to at least genus and pelecypods, gastropods, and crustaceans to species. If an expert is to be used in the identification of certain groups, his/her name and the group(s) to be identified should be specified.
2. Dip net with fine mesh and/or a surber sampler.
3. Stereo dissection microscope.

*Experience may substitute for education in exceptional cases if expertise in area can be proven by written examples of work.

**Ph.D. dissertation may substitute for (1) one year's experience if it involved the biology or ecology of aquatic invertebrates. (REVISED 11/98)

ENVIRONMENTAL/WATER QUALITY

EDUCATION GRADUATE AND UNDERGRADUATE TRANSCRIPTS REQUIRED

BS in Chemistry, Biology, Environmental Science, Sanitary Engineering, Geology; including 12 semester hours in chemistry-related courses including (1) one course related specifically to water chemistry of streams and lakes. *

QUALIFYING EXPERIENCE PRESENT CURRICULUM VITAE

4 years with a BS
2 years with an MS
2 years with a Ph.D.**

Qualifying experience is considered to be work having to do with the chemistry of freshwater.

It must include the following:

1. A field study, publication, or presentation at a scientific meeting demonstrating knowledge of the sampling and determination of water chemistry of freshwater streams and/or lakes.
2. One-year experience in the assessment of impacts of construction projects on water chemistry, including measures to reduce these impacts.

EQUIPMENT LIST

Capacity to perform the following tests:

- Color
- Turbidity
- PH
- Iron
- Nitrate Nitrogen
- Alkalinity
- Acidity
- Chloride
- Ammonia Nitrogen
- Sulfate
- Hardness
- Specific Conductance
- Orthophosphate
- Dissolved Oxygen
- Discharge

*Experience may substitute for education in exceptional cases if expertise in area can be proven by written examples of work.

**Ph.D. dissertation may substitute for (1) one year's experience if it involved the biology or ecology of plants. (REVISED 11/98)

ENVIRONMENTAL/BOTANY

EDUCATION GRADUATE AND UNDERGRADUATE TRANSCRIPTS REQUIRED

BS in Biology or Environmental Science including thirty (30) semester hours in biology with 3 three-hour courses related to botany such as plant taxonomy, plant ecology, dendrology, botany, plant physiology, silviculture, etc.*

QUALIFYING EXPERIENCE PRESENT CURRICULUM VITAE

4 years with a BS

2 years with an MS

2 years with a Ph.D. * *

Qualifying experience is considered to be work having to do with the ecology or biology of plants.

It must include the following:

1. A field study, publication or presentation at a scientific meeting demonstrating knowledge of the taxonomy, sampling, and ecology of plants.
2. One (1) year experience in the assessment of impacts of construction projects on plants and plant communities, including mitigation measures.
3. Work indicating a knowledge of Kentucky and Federal rare, threatened and endangered species of plants.

EQUIPMENT LIST

1. Taxonomic references sufficient to identify plants to species level.
2. Plant press.

*Experience may substitute for education in exceptional cases if expertise in area can be proven by written examples of work.

**Ph.D. dissertation may substitute for (1) one year's experience if it involved the biology or ecology of plants. (REVISED 11/98)

ENVIRONMENTAL/TERRESTRIAL ZOOLOGY**EDUCATION GRADUATE AND UNDERGRADUATE TRANSCRIPTS REQUIRED**

BS in Biology or Environmental Science including thirty (30) semester hours in biology with 3 three-hour courses related to terrestrial zoology such as vertebrate zoology, wildlife management, wildlife ecology, mammalogy, herpetology, or ornithology.*

QUALIFYING EXPERIENCE PRESENT CURRICULUM VITAE

4 years with a BS

2 years with an MS

2 years with a Ph.D.**

Qualifying experience is considered to be work having to do with the ecology or biology of terrestrial animals.

It must include the following:

1. A field study, publication or presentation at a scientific meeting demonstrating knowledge of the taxonomy, sampling, and ecology of terrestrial animals.
2. One (1) year experience in the assessment of impacts of construction projects on terrestrial animals and wildlife habitat including mitigation measures.
3. Work indicating a knowledge of Kentucky and Federal rare, threatened and endangered species of terrestrial animals.

EQUIPMENT LIST

1. Taxonomic references sufficient to identify animals to species level.
2. Mist nets.
3. Caving lights.
4. Small mammal traps.

*Experience may substitute for education in exceptional cases if expertise in area can be proven by written examples of work.

**Ph.D. dissertation may substitute for (1) one year's experience if it involved the biology or ecology of terrestrial animals. (REVISED 11/98)

ENVIRONMENTAL/WETLANDS

EDUCATION GRADUATE AND UNDERGRADUATE TRANSCRIPTS REQUIRED

BS in Biology or related to natural sciences including thirty (30) semester hours in biology. With at least eight (8) semester hours (or six (6) semester hours with labs) of courses related to botany and flora, one 3-hour course in ecological analyses, habitat assessments, or plant community assessments. At least 1 three-hour course in vertebrate biology or classification such as ichthyology, herpetology, entomology, ornithology, or mammalogy.* (REVISED 3/02)

REQUIRED TRAINING - CERTIFICATES REQUIRED

Training in the application of the Corps of Engineers Wetland Delineation Manual, 1987. Training must satisfy pre-requisite requirements for the Wetland Delineator Certification Program.

QUALIFYING EXPERIENCE PRESENT CURRICULUM VITAE –

Written examples required three (3) years experience in practicing wetland delineation and mitigation under the US ACE supervised 404 program.

NOTE: MS and Ph.D. degrees may substitute for experience for up to two (2) years, only if the degree was completed with thesis or (2) two years of research work related to wetlands. An M.A. degree may qualify for one (1) year experience if it relates to wetlands.

Qualifying experience applies to the individual and is considered to be work having to do with the classification, delineation, and/or mitigation of jurisdictional wetlands.

Qualifying experience must include the following:

Project Leader on US ACE approved or reviewed wetland delineation projects; may include any example where wetlands were determined or delineated and underwent US ACE review; AND,

Project Leader of field study and author of a publication demonstrating competence in sampling and analytical procedures involving wetlands; OR,

Project Leader for wetland mitigation involving creation, restoration or enhancement of wetlands used in 404 permits; OR,

Project Leader for monitoring studies and reports of wetlands that have been reviewed and approved by US ACE.

EQUIPMENT AND REFERENCE MATERIAL

List Equipment and Material Sampling equipment necessary for wetlands analysis shall include:

- (1) a soil probe, auger, or spade, for soil samples,
- (2) Munsell soil color chart for hydric soil determinations,
- (3) taxonomy reference books for plant identification,
- (4) the USFWS publication entitled National List of Plant Species that Occur in Wetlands: Kentucky edition or Region 1 Northeast,
- (5) plant press and collection bags, and
- (6) stereo dissection microscope for plant identification.

*Education cannot substitute entirely for experience requirement. MS and Ph.D. degrees in the area of wetland may qualify for up to two (2) year's experience. MA degrees may qualify up to one (1) year experience.

**Education and experience cannot be substituted for training. (REVISED 3/02)

ENVIRONMENTAL/PREHISTORIC AND HISTORIC ARCHAEOLOGY

PROFESSIONAL QUALIFICATIONS

The principal investigator is responsible for the quality of the archaeological work and resulting report. AU Section 106 related investigations should be carried out under the direction of a principal investigator. He or she must ensure that all other project personnel have sufficient experience to perform assigned duties.

Principal Investigator. The Secretary of the Interior's Standards for Professional Qualifications in Archaeology are those used by the National Park Service and have been previously published in the Code of Federal Regulations, 36 CFR Part 61.

These are quoted below:

The qualifications define minimum education and experience required performing identification, evaluation, registration, and treatment activities. In some cases, additional areas or levels of expertise may be needed, depending upon the complexity of the task and the nature of the historic properties involved. In the following definitions a year of full-time professional experience need not consist of a continuous year of full-time work but may be made up of discontinuous periods of full-time work adding up to the equivalent of a year of full-time experience.

Archaeology

The minimum professional qualifications in archaeology are a graduate degree in archaeology, anthropology, or closely related field plus:

At least (1) one year of full-time professional experience or equivalent specialized training in archaeological research, administration or management;

At least (4) four months of supervised field and analytic experience in general North American archaeology; and

Demonstrated ability to carry research to completion.

In addition to these minimum qualifications, a professional in prehistoric archaeology shall have at least (1) one year of full-time professional experience at a supervisory level in the study of archaeological resources of the prehistoric period. A professional in historic archaeology shall have at least (1) one year of full-time professional experience at a supervisory level in the study of archaeological resources of the historic period.

In addition to the previous criteria, the SEPO recommends that eight (8) of the twelve (12) months of professional field experience be in Kentucky or the eastern United States.

Field Supervisor

Survey Projects (Phase I)

1. BA in Anthropology or closely related field,
2. One (1) year field experience; and
3. A knowledge of Ohio valley archaeology.

Testing Projects (Phase II)

1. Two (2) academic years of graduate school in Anthropology or closely related field;
2. Demonstrated ability to analyze artifacts and write reports;
3. One (1) year field experience, of which four (4) months must be excavation; and
4. A knowledge of Ohio Valley archaeology.

Mitigation Projects (Phase III)

1. MA in Anthropology or closely related field;
 2. One (1) year field experience, of which four (4) months must be excavation; and
 3. A knowledge of Ohio Valley archaeology.
- (REVISED 11/98)

ENVIRONMENTAL/NOISE IMPACT ANALYSES

EDUCATION

B.S. in Engineering, Environmental Sciences, or BA with course work related to transportation-related course work. At least one (1) semester hour of computer sciences.

QUALIFYING EXPERIENCE

One (1) year of co-authored base studies with BS or BA

Six (6) months of co-authored based studies with MS, MA, or Ph.D.

Qualifying experience is considered to be work associated with noise impact assessment and modeling techniques and should include the following:

Research or documentation, which demonstrates knowledge of noise, impacts assessment, and engineering principles. Attendance of noise impact assessment

and abatement courses offered by FHWA or independent consultants are required. Experience in field noise sampling along with collaboration of documentation required for submittal of a noise impact analysis. Including noise levels and abatement measures as required by FHWA 23 CFR Part 772 "Procedures for Abatement of Highway Traffic Noise and Construction Noise."

EQUIPMENT

- FHWA approved noise prediction computer models
- STAMINA2.0/OPTIMA (Highway) (until December 2002)
- TNM 1.1 (all new projects)
- Computer hardware utilized for analyses
- Noise level meter or analyzer (REVISED 3/02)

ENVIRONMENTAL/AIR QUALITY ANALYSES

EDUCATION

BS in Engineering, Environmental Sciences, or Meteorology; including twelve (12) semester hours of air quality-related courses, (i.e. meteorology, engineering principles, or dispersion modeling). At least three (3) semester hours of computer sciences. BA With course work related to transportation planning.

QUALIFYING EXPERIENCE

4 years with a BS or BA

2 years with an MS or MA

2 years with a Ph.D. (1 year if research or dissertation related to air quality principles)

Qualifying experience is considered to be work associated with air quality principles and modeling techniques and should include the following:

Research or documentation, which demonstrates knowledge of air pollution meteorology, dispersion modeling, and engineering principles.

Affiliation with a professional society related to air quality.

One (1) year experience in the assessment of impacts of construction projects on ambient air quality including mitigation measures as required by the Clean Air Act Amendments of 1990.

Work indicates knowledge of Kentucky and Federal Air Quality Regulations.

EQUIPMENT

State of the art computer models, which consists of:

- A. Mobile Source Emissions Model: MOBILE5a
- B. Dispersion Model: CAL3QHC
- C. F-I Computer hardware utilized for analyses. (REVISED 11/98)

STREAM MITIGATION

A firm shall have at least one (1) engineer licensed in Kentucky who will be directly involved in project development, and at least one (1) person with training up to Rosgen Level 4. (The Rosgen method is a classification-based natural stream design approach that incorporates elements of analog and empirical design methods. It is the most commonly used scheme for the classification of streams. The Kentucky Division of Water, a state regulatory agency has adopted Rosgen's classification scheme. A series of four (4) training courses (Levels I to IV) are offered by Mr. Rosgen). The personnel employed by the firm shall have expertise in natural stream channel design through previous experience, specialized training, education, or a combination thereof. The overall qualification of a firm to perform natural stream channel design will be evaluated on the basis of past performance whether for the Transportation Cabinet or another agency. A firm requesting prequalification solely based on work with other agencies shall provide sufficient information to allow for an evaluation of past performance with that agency. This information must include the name of an individual within that agency directly responsible for the project and may include performance evaluation documents. Equipment shall be adequate to provide plans and studies utilizing computer drafting and digital terrain modeling techniques for an average type of project and to a format specified by the Cabinet. Sufficient financial information shall be provided to demonstrate the stability of the firm during the pre-qualification period.

Projects are typically divided into a data collection phase and design phase. A firm shall have the capability to provide the following products:

Stream Data Collection - Document stream conditions for reference streams, streams to be restored, or streams that will be disturbed by road construction projects. Product of Stream Data Collection portion of work is a report containing the following information:

- Location map drawn to scale, with any notes necessary to help find the site
- Stream and watershed areas accurately delineated on USGS 7 1/2' Quad maps
- Watershed condition and hydrologic characteristics
- Scale drawings of stream profile and cross-sections
- Legible plan view sketches of stream area
- Photographs referenced to the plan view (digital photos available upon request)
- Description of existing riparian zone condition
- Stream Ecology assessment -- May be qualitative, or quantitative depending on stream order
- Tabulated survey notes
- Description of channel substrate, banks material, and bank condition
- Tabular and graphical results of pebble counts
- Tabular and graphical results of bar samples
- Estimates of baneful depth with supporting field evidence

Estimates of baneful depth based on hydrologic and hydraulic analyses
Morphological (Rosgen) stream classification

Natural Stream Design - Provide stream channel construction/restoration plans in the detail required for construction of the project. The format for drawings shall conform to cabinet CADD standards. Product of work is a set of construction plans and reports containing the following elements:

Scale drawings showing the proposed work in plan, cross-section and profile
Construction detail drawings as needed for clarity

Planting details

Description of measures to be used for creation of aquatic riparian habitat

Description of material is used for in-stream habitat and for bank stabilization

Monitoring plan, as requested

Summary report documenting all design criteria, analyses and computations

In addition to the above requirements, the firm shall have personnel that meet each of the pre-qualification requirements below:

Fisheries

Freshwater Macroinvertebrates

Water Quality

Botany

Some projects will require prequalification in Surveying and Geotech. (REVISED 3/02)

ENVIRONMENTAL/SOCIO-ECONOMIC ANALYSIS

EDUCATION

Bachelor's degree with a major, minor; emphasis, or area of concentration in planning; or a bachelor's degree in transportation or a closely related field. Closely related fields include administration, business, economics, geology, geography, political science, and others.

QUALIFYING EXPERIENCE

One (1) year with a bachelor's degree.

Qualifying experience is considered to be work to do with urban and regional planning or socio-economic impact analysis.

Work indicates a knowledge and familiarity with FHWA guidelines and regulations relative to socioeconomic analyses and community impact assessments of transportation projects.

Work on a community comprehensive plan including land use planning, population, and economic base study analyses, etc.

CONTINUING EDUCATION

Courses in Relocation, Right-of-Way, Community Impact Assessments, Environmental Justice, Public Involvement, Context Sensitive Design, Secondary and Cumulative Impacts, and related topics

ENVIRONMENTAL/CULTURAL-HISTORIC/ARCHITECTURAL

PROFESSIONAL QUALIFICATIONS

The Secretary of the Interior's Standards for Professional Qualifications in History and Architectural History are those used by the National Park Service and they have been previously published in 36 CFR Part 61. Familiarity with Section 106 is also required. In order to be qualified in history and/or architectural history, the following education and experience should be met:

History: The minimum professional qualification in history is a graduate degree in history or a closely related field, or a bachelor's degree in history, or a closely related field, plus one (1) of the following:

- (a) At least two (2) years of full-time experience in research, writing, teaching, interpretation, or other demonstrable professional activity with an academic institution, historical organization or agency, museum, or other professional institution; or
- (b) Substantial contribution through research and publication, to the body of scholarly knowledge in the field of history.

Architectural History: The minimum professional qualifications in architectural history are a graduate degree in architectural history, art history, historic preservation, or closely related field, with course work in American architectural history; or a bachelor's degree in architectural history, art history, historic preservation, or closely related field, plus one (1) of the following:

- (a) At least two (2) years of full-time experience in research, writing, or teaching in American architectural history or restoration architecture with an academic institution, historical organization or agency, museum, or other professional institution; or
- (b) Substantial contribution through research and publication to the body of scholarly knowledge in the field of American architectural history.

SPECIFIC EXPERIENCE

Also in order to be qualified; experience and/or training and knowledge with FHWA guidelines and regulations relative to cultural-historic architectural analyses of transportation projects must be demonstrated. This includes familiarity with the Section 106 process and Section 4(f). (REVISED 11/98)

ENVIRONMENTAL/EIS WRITING AND COORDINATION

EDUCATION

Graduate of a college or university with a bachelor's degree within the field of environmental analysis or a closely related field.

QUALIFYING EXPERIENCE

4 years with a BS

2 years with an MS/MA

Qualifying experience is considered to be work and training having to do with the preparation and coordination of environmental assessments and environmental impact statements.

It should include, or be demonstrated by the following:

1. Specific training in EA/EIS preparation, particularly NHI/FHWA training courses;
2. Work indicating one's knowledge and familiarity with FHWA guidelines and regulations in regard to EA/EIS writing and coordination;
3. Specific experience in EA/EIS preparation (as single or principal author);
4. Specific examples of EA/EIS'S authored (by project identification and client); or
5. List other experience with technical writing and/or special environmental studies prepared. (REVISED 11/98)

ENVIRONMENTAL/UNDERGROUND STORAGE TANK AND HAZARDOUS MATERIALS SITE

RECONNAISSANCE AND SAMPLING

EDUCATION

BS in Chemistry, Chemical Engineering, Geology, Hydrogeology, Industrial Hygiene, or closely related field of study. Specify individual personnel who will be performing each phase of work indicated by application for prequalification.

QUALIFYING TRAINING

Minimum 40-Hour Waste Site Worker Protection training to comply with OSHA CFR 1910.120(e)(2).

Include proof of current certification, (i.e., current 40-hour certification and/or current 8-hour annual refresher course certification) for each individual listed to perform Detailed Site Reconnaissance/Site Sampling and Re-mediation Services (Phase II & 111).

QUALIFYING EXPERIENCE

Qualifying experience is considered to be on-site experience and familiarity with all aspects of the required scope of work for each phase or activity:

1. Phase I (Initial Site Assessments): Demonstrated proof of previous experience conducting ISAs for transportation projects including submittal of a sample Phase I report authored by the individual seeking prequalification.

Specified personnel shall be familiar with:

- a. Data-gathering techniques and accessing resources, e.g., resource agency records, soil surveys, Sanbourn Insurance maps, topographical maps, title searches, historic aerial photography, etc.;
- b. Federal and State environmental regulations and UST Programs and Procedures;
- c. Walkover inspection documenting the physical characteristics of the site, i.e., stressed vegetation, odors, staining, drums, etc.;
- d. Site mapping techniques indicating the position of buildings, fencing, USTS, ASTS, staining, questionable areas, wells, surface water, etc.;
- e. Surface geology;
- f. Technical writing skills for the execution of required reports;

2. Phase II (Preliminary Site Investigations): A minimum of two (2) years experience conducting on-site Phase II (PSI) fieldwork is required.

A sample Phase II report prepared by specified personnel, as well as information evidencing experience with the following, must be provided:

- a. Complete familiarity with Federal and State EPA regulations regarding site sampling methods and procedures;
- b. Complete familiarity with appropriate site-specific field instrumentation, analyses, and documentation thereof; and

c. Subsurface geology and groundwater parameters.

1. Site mapping and boring and sampling location selection criteria;
2. Technical writing skills for the execution of required reports;
3. Proof of Kentucky Division of Water Certification;

3. Tank Removal/Disposal

a. Proof of State Fire Marshall Certification must be presented.

4. Laboratory Services pre-qualification requires presentation of the following:

- a. EPA Certification of in-house laboratory to perform prescribed material analyses according to EPA Standard Methods; and
- b. If laboratory services are supplied by an affiliate lists the affiliate.

5. Re-mediation Services requires a minimum of two (2) year experience in the underground storage tank site re-mediation field.

Prequalification requires presentation of a sample of an approved Closure Assessment (Phase III) prepared by specified personnel and data evidencing the following:

- a. Complete familiarity with Federal and State EPA regulations;
- b. Complete familiarity with site documentation required by the appropriate agencies, (e.g., Risk Assessments, Corrective Action Plans, Health and Safety Plans, Closure Assessments, permits, etc.); and
- c. Complete knowledge of the most cost-effective method of re-mediation, which protects public health and the environment under both Federal and State standards as appropriate.

6. Complete familiarity with Federal and State EPA regulations regarding site sampling methods and procedures.

7. Complete familiarity with appropriate site-specific field instrumentation, analyses, and documentation thereof.

8. Affiliation or in-house licensed/certified hazardous materials transporter. Present proof of certification.

9. Knowledge of appropriate permitted waste disposal facilities nearest to the affected site and the requirements thereof.

10. SFM certification for tank removals. Present proof of certification.

EQUIPMENT

Please list field equipment and instrumentation, as well as laboratory instrumentation, and drilling equipment if drilling and laboratory services are to be rendered in-house. If these services are to be contracted by an affiliate, please list the affiliated firms contracted to supply these services.

1. No specific or specialized equipment is required for the execution of Phase I Site Assessments.
2. Phase II-PSI field inspectors and re-mediation personnel should be equipped with appropriate safety equipment to comply with OSHA regulations as well as the necessary field instrumentation. Field instrumentation should include the necessary site-specific instrumentation such as a PID (Photo Ionization Detector) or FID (Flame Ionization Detector), oxygen monitor, LEL (Lower Explosive Limit) monitor, Geiger counter, etc. Supply list of personal protection equipment and field instrumentation.
3. Analytical laboratory instrumentation necessary to perform materials analyses according to EPA Standard Methods if analyses are to be performed in-house. (REVISED 11/98)